

ABSTRACT

This invention provides a multi-channeled loop heat transfer device with high efficiency fins. In this device, each of the
5 evaporating and condensing sections is fabricated using parallel, multi-channeled flattened tubes. This device has a liquid-pumping capillary wick within each channel of the flattened tubes. The wick is allowed to act as a fluid diode within a heat transport loop only when a minus temperature gradient is maintained in the
10 liquid in the upstream of the boundary layer and in the vapor in the downstream of the boundary layer. In this device, the vapor pipe is separated from the liquid pipe, with the temperature of the vapor pipe always maintained higher than that of the liquid pipe. The liquid is thus allowed to always flow from the
15 condensing section into the liquid pipe due to vapor pressure of the vapor pipe. This device is also automatically restarted without failure when thermal load acts on the device after a complete stop of the device.